REMARKS

This is a full and complete response to the Office action dated March 8, 2007.

All comments and remarks of record are herein incorporated by reference. Applicants respectfully traverse these rejections and all comments made in the Office Action. Nevertheless, in an effort to expedite prosecution, Applicants provide the following remarks regarding the cited references.

DISPOSITION OF CLAIMS

Claims 11-14 and 17-28, as amended, are currently pending in the application. Claims 11 and 24 have been amended to correct a typographical error. Claim 19 has been amended to depend from claim 11. No new matter has been added.

REJECTION UNDER 35 USC §112

Claims 19, 21 and 23 stand rejected under 35 USC §112, second paragraph, as being indefinite as claim 19 depends from claim 16, which has been canceled. Applicants now amend claim 19 to depend from claim 11. In view of this amendment, Applicants submit that Claims 19, 21 and 23, as amended, are not indefinite and respectfully request withdrawal of the 35 USC §112, second paragraph, rejection.

REJECTION UNDER 35 USC §103

Claims 11-14 and 17-27 stand rejected under 35 USC §103(a) as being unpatentable over **Victor et al.**, US 6,127,094 (hereinafter "**Victor**"). Applicants respectfully traverse this rejection.

It is Applicants position that based on the demonstration of unexpected results as shown in the Examples of the present application, it would not be obvious for one of ordinary skill in the art to modify **Victor** to obtain a ratio of isoprene to butadiene of 20/80 to 80/20 in the midblock, and thus no prima facie case of obviousness can be established.

According to §103, in order to establish a prima facie case of obviousness, there must be (1) some suggestion or motivation to modify the references, (2) reasonable expectation of success and (3) the prior art reference must teach or suggest all of the claim limitations. *See In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438, MPEP §2143.

The Examiner states that **Victor** teaches a photopolymerizable composition for use in flexographic printing plates. The Examiner also asserts that the composition comprises up to 50wt% of a thermoplastic elastomeric block polymer having a general formula of A-B-A, wherein A is non-elastomeric and B is elastomeric, and such block copolymers may comprise isoprene and butadiene. It is the Examiner's position that although **Victor** does not teach the block copolymers are present in a ratio of 20/80 to 80/20 of isoprene/butadiene, it would have been obvious to one of ordinary skill in the art to use such a ratio because **Victor** teaches combining linear polymers, such as isoprene and butadiene to form water-resistant resin compositions after photopolymerization.

Applicants respectfully disagree.

Victor is directed to water developable photosensitive printing plates and compositions useful in preparation thereof. *See* **Victor**, col.1, lines 6-9. **Victor** sought to produce printing plates which would have good properties, yet allow for water processing, where material could be carried away by an aqueous media. *See* **Victor**, col. 3, lines 8-39. For example, a photosensitive printing plate could be exposed to electromagnetic radiation to promote polymerization of the printing plate in the form of a desired image, and then afterward, allow for the non-exposed portions to be removed by an aqueous media. *See* **Victor**, col. 12, lines 49-61. The portions exposed to the radiation would not be removed as they would have been hardened by the radiation exposure, thereby leaving the desired image on the printing plate.

The composition disclosed by **Victor** is comprised of (col.3, line 43 to col. 4, line 13):

(A) 20-80 wt% of a copolymer which includes elastomer forming monomers, which are acrylates, methacrylates and the like;

(B) 0.2 to 2 mol of a washout aid

(C) 5-70 wt% of at least one ethyleneically unsaturated monomer

(D) 0.01 to 20 wt% of at least one phopolymerization initiator

(E) 0-50 wt% of at least one polymer selected from

(i) a linear thermoplastic having the general formula (A-B-A), (A-B) or (A-B)

(ii) a linear polymer;

(F) 0 to 20 wt% of at least one plasticizer;

(G) 0 to 20 wt% of at least one emulsifier.

The Examiner focuses on component E which is discussed in detail from col. 7, line 40, to col. 8, line 34, in **Victor**. It is disclosed in **Victor** at col. 8, that the linear thermoplastic elastomer blocks may have the general formula (A-B-A), $(A-B)_n$ or (A-B), where A is non-elastomeric polymer block and B is an elastomeric polymer block. It is further stated in **Victor** that the nature of B units may be varied "by using two or more different elastomeric materials within the B block." *See* **Victor**, col. 8, lines 17-18.

Applicants respectfully assert that while **Victor** does indicate that the B block may contain two or more different elastomeric materials, **Victor** does not disclose or suggest which specific two or more different elastomeric materials should be used. **Victor** also does not disclose or suggest that there would be an advantage to using a block copolymer that contains a mixed I/B mid block compared to using a midblock that contains only one type of monomer. Based on the teachings of **Victor**, Applicants maintain that one of ordinary skill in the art would not expect there to be any difference in properties obtained when using one elastomeric material in the midblock as compared to "two or more elastomeric materials" in the midblock. Applicants respectfully note that **Victor** produces the expectation that one elastomeric material can be substituted for two elastomeric materials and vice versa without any change in performance. Additionally, the use of component (E) in **Victor** is entirely optional, as it is indicated its range can be 0-50 wt%. This further produces the expectation that component (E) would not have a significant effect on the printing plate according to **Victor**.

Applicants respectfully note that the Federal Circuit has indicated that unexpected results may serve as a basis to show a claimed invention was not obvious. *See In re Dillon*, 919 F.2d 688, 16 USPQ2d 1897 (1990); MPEP §2144.08 II(B). Applicants

respectfully submit that the examples of the present application show unexpectedly that it is possible to have excellent transparency while maintaining a desirable balance of processing stability and plate hardness by using a mixed midblock of isoprene and butadiene within the range as claimed by Applicants. As indicated in the present Application, the state of the art of printing relief forms did not always meet the requirements for flexographic printing. *See* Application, pg. 2, paragraph [008]. For example, when S-I-S block copolymers are used, the obtained flexographic printing plates show a too low and hence unattractive Shore A hardness. *See Id.* Furthermore, when S-B-S block copolymers are used, the obtained flexographic printing plates show a bad processing stability leading to gel formation and resulting bad resolution of the final developed plate. *See Id.* When mixtures of the two are used, however, the transparency of the flexographic printing plate is bad.

In the present invention, Applicants have demonstrated that with the present block copolymer, it is possible to have excellent transparency while at the same time maintaining a desirable balance of processing stability and plate hardness thereby providing a polymer which overcomes the deficiencies of the prior art.

More specifically, as shown in the data in the present application, when the various polymers were examined for viscosity stability during melt processing, it was found that SBS copolymers of comparable structure (diblock and vinyl content) showed a tendency to cross-link more than SI/BS copolymers, resulting in increased viscosity and the creation of gels for the SBS copolymers. *See* Table 6. In this particular case the SIS1 copolymer also demonstrated acceptable stability.

However, the SIS1 copolymer as shown in Tables 5 and 7 showed very poor hardness when compared with the SBS and SI/BS copolymers. As can be seen from the data, the SBS1 copolymer demonstrated acceptable hardness.

The copolymer of the present invention provides a good balance of properties with regard to stability and hardness as evidenced by the data in Table 6 wherein the two S(I/B)S are clearly better in stability than the comparable SBS copolymers and in Table 7 where it is shown that the S(I/B)S1 had a hardness much higher than that of SIS alone.

Therefore, the mixed isoprene/butadiene midblock demonstrated a much better balance of stability and viscosity than the SBS copolymers and a much better hardness than the SIS copolymers. Additionally, the mixed midblocks according to the present claims demonstrated good transparency properties compared to blends of SIS and SBS copolymers which showed poor transparency. One of ordinary skill in the art would not expect such an improvement in the balance of properties from the disclosure of **Victor**, which indicates the equivalence between block copolymers having only one type of polymer and those having as those having two or more. Therefore, no prima facie case of obviousness has been demonstrated, and Applicants respectfully request the above mentioned rejection be withdrawn.

REJECTION UNDER 35 USC §103(a)

Claims 11-14, 20-24 and 28 stand rejected under 35 USC §103(a) as being unpatentable over **Chen et al.** US 4,369,246 (hereinafter "**Chen**") as evidenced by **Holden et al.** (hereinafter "**Holden**"), US 3,265,765. Applicants respectfully traverse this rejection.

The Examiner states that **Chen** teaches photosensitive elements comprising a layer with a solvent soluble thermoplastic, elastomeric, block copolymer, an ethylenically unsaturated compound and an addition polymerizable initiator. The Examiner further asserts that although **Chen** teaches the A-B-A formula for block copolymers in composition, he does not specifically teach that the block copolymers comprise isoprene and butadiene in amounts of 20/80 to 80/20. The Examiner argues that **Chen** discloses that segment B may comprise a monomer mixture, and furthermore, that **Holden** teaches that the elastomeric mid-section of the polymer block comprises monomer mixtures of isoprene and butadiene. It is then concluded by the Examiner that it would be obvious to one of ordinary skill in the art to use the isoprene and butadiene block copolymers in the composition of **Chen** to form suitable mid sections of elastomeric compositions as evidenced by **Holden**.

Applicants respectfully disagree.

Applicants respectfully assert that **Chen** does not disclose or suggest a mixed random midblock in the passage cited by the Examiner or in the remainder of the disclosure. The section of **Chen** cited by the Examiner is as follows (col. 4, lines 25-29):

> It is, of course possible to vary the precise nature of the unit within the scope of the invention, e.g., by using two different non-elastomeric terminal blocks, A, or by creating block or graft polymeric substitutions in blocks A and B.

It should be noted that the term "unit" as defined by **Chen** is referring to the entire block copolymer A-B-A and not the individual blocks. *See* **Chen**, col. 4, line 19. Furthermore, Applicants respectfully assert that the recitation of "creating a block or graft polymeric substitutions" does not disclose or suggest a mid block having a substantially random copolymer block (I/B) of predominantly isoprene and butadiene as recited in the instant claims.

Chen clarifies that such block copolymers are disclosed in **Holden**, which is incorporated by reference into **Chen**. The Examiner states that **Holden** teaches that the elastomeric mid-section of the polymer block may comprise monomer mixtures of isoprene and butadiene. However, Applicants respectfully assert that none of the block copolymers shown in **Holden** disclose or suggest a substantially random mixed midblock.

As stated in **Holden**, "the block copolymers forming the basic aspects of this invention may be regarded as two types: (1) "pure" block copolymers...and (2) block polymers employing the "tapered" mid section." *See* **Holden**, col. 4, lines 63-70; col. 3, lines 13-49.

The first type, "pure" block copolymers are prepared by adding a non-elastic block A until all the monomer is consumed, and then adding the elastomeric block B until all such B monomers are polymerized, and then injecting A monomers to form a second terminal block. *See* **Holden**, col. 3, lines 13-20. Thus, each A block and B block is only composed of one type of monomer.

The "tapered" type block copolymer is prepared by adding a non-elastic block A until all the monomer is consumed. *See* **Holden**, col. 3, lines 21-49. After being formed,

the mixture will contain or has added to it further non-elastomeric monomers. At that time, elastomeric monomers are added. Because the elastomeric monomers polymerize at a greater rate, what occurs is that the block forming immediately adjacent to the original non-elastomeric block is rich in elastomeric monomer units, but gradually "tapers" becoming increasingly rich in non-elastomeric monomers. *See* **Holden**, col. 3, lines 21-49. A terminal non-elastomeric block is then polymerized.

In either case described above "pure" or "tapered" there is no substantially random block of isoprene and butadiene, or any mixture of two different elastomeric blocks.

The portions of **Holden** cited by the Examiner, col. 4, lines 15-20 and 32-35 also do not disclose or suggest a random block of isoprene and butadiene. Applicants respectfully assert that the portion in col. 4, lines 15-20 is merely discussing what may make a particular block, such as A or B, either of an elastomeric character or a non-elastomeric character. Thus, it is described that if a block has both a non-elastomeric monomer and an elastomeric monomers, whether the block is considered elastomeric or non-elastomeric is dependent on the ratio of each. It is not disclosed or suggested that a random distribution of dienes be employed.

This is confirmed in the portion of col. 4, lines 32-35, wherein it is stated:

> The elastomeric mid section can be a polymer block of essentially any synthetic elastomer preferably of an aliphatic conjugated diene, such as isoprene, methyl isoprene, butadiene, copolymers of the styrene-butadiene type, and butadiene-acrylonitrile.

As can be seen in the listing above, no mixture of two conjugate dienes is listed or suggested. The copolymers listed are not of two conjugated dienes but instead of styrene-butadiene, and butadiene-acrylonitrile. This is further supported by the Examples of **Holden** where only one conjugated diene is used in the midblock the copolymers

disclosed. As in Table 1 of **Holden**, styrene-butadiene-styrene (SBS) and styrene-isoprene-styrene are employed. Also, Example VII of **Holden** shows the preparation of a block copolymer having a "tapered" midblock of isoprene and styrene. Nowhere is it disclosed or suggested a midblock having a random distribution of isoprene and butadiene.

One of ordinary skill in the art reading **Chen** or **Holden** would **not** understand the references to teach a substantially random copolymer block (I/B) of predominantly isoprene and butadiene in a mutual weight ration in the range of from 20/80 to 80/20 according to the instant claims. Moreover, one of ordinary skill in the art would have no expectation that such would produce superior results as shown by the examples in the present application as discussed above. Therefore, no prima facie case of obviousness can be established, and Applicants respectfully request the above rejection be withdrawn.

In order to facilitate the resolution of any issues or questions presented by this paper, the Examiner is invited to directly contact the undersigned by phone to further the discussion.

The undersigned representative requests any extension of time that may be deemed necessary to further the prosecution of this application.

The undersigned representative authorizes the Commissioner to charge any additional fees under 37 C.F.R. 1.16 or 1.17 that may be required, or credit any overpayment, to Deposit Account No. 14-1437, referencing Attorney Docket No. 8132.003.PCUS00.

Conclusion

Having addressed all issues set out in the Office action, Applicants respectfully submit that the claims are in condition for allowance and respectfully request that the claims be allowed.

Respectfully submitted,
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